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Claims

[c1] 1.- A process for manufacturing printed circuit boards with protected spaces between tracks, of the type comprising the steps of:

a)arranging an initial board made up of a substrate (1) in the form of a two-sided board of a dielectric material, and at least one plate (2) of a conducting material, joined by means of a layer of adhesive (8) to at least one of said sides of the substrate (1);

b)removing, by means of a selective chemical milling process with photoresist, areas of said plate (2) to provide tracks (5) of said conducting material joined to said substrate (1) and separated by spaces between tracks (6);

c)applying on said substrate (1) and tracks (5) a resinous electroinsulating filler material (7) to fill said spaces between tracks (6), covering the tracks (5), and hardening said filler material (7) by heat or ultraviolet radiation; and

d)applying an abrasion treatment on the filler material (7) and upper part of the tracks (5) to obtain flush upper surfaces (3) of the filler material (7) and tracks (5), characterized in that it comprises the additional step of:

e)after step c) and during step d), subjecting the printed

circuit board to cooling to carry out a reduction of temperature in the filler material (7) to below its glass transition temperature.

[c2] 2.- A process according to claim 1, characterized in that said tracks (5) are made of copper and have a thickness of 210 µm to 400 µm.

[c3] 3.- A process according to claim 2, characterized in that said reduction of temperature in the filler material (7) goes from approximately 80°C at the conclusion of step c) to approximately 30°C at the beginning of step d), for a glass transition temperature of the filler material (7) of approximately 40°C.

[c4] 4.- A process according to claim 2, characterized in that the step c) for applying the filler material (7) is carried out after step b) without polishing the edges (10) created on the tracks (5) by means of chemical milling.

[c5] 5.- A process according to claim 2, characterized in that after step d), it comprises the additional step f) for applying a solder resistant mask (9) on selected areas of said flush upper surfaces (3) of the tracks (5) and filler material (7) by a selective printing process, and hardening it by heat or ultraviolet radiation.

[c6] 6.- A process according to claim 2, characterized in that

said layer of adhesive (8) has a peel strength of at least 6 N/mm.

[c7] 7.- A process according to claim 6, characterized in that said layer of adhesive (8) has a peel strength of at least 8 N/mm.

[c8] 8.- A process according to claim 2, characterized in that the filler material (7) arranged in the spaces between tracks (6) is a bi-component or single-component resin, hardened by ultraviolet radiation, with a glass transition temperature comprised between 40°C to 130°C.

[c9] 9.- A process according to claim 8, characterized in that the glass transition temperature of the filler material (7) is comprised between 40°C to 60°C.

[c10] 10.- A process according to claim 9, characterized in that at the time of its application, the viscosity of the filler material (7) ranges from 14500 mPas to 20000 mPas for a track (5) thickness of 400 µm, to viscosity ranging from 26000 mPas to 30000 mPas for a track (5) thickness of 210 µm.

[c11] 11.- A process according to claim 8, characterized in that the filler material (7) has a density of approximately 1.35 g/cm^3.

[c12] 12.- A process according to claim 8, characterized in that the filler material (7) is an acrylic resin.

[c13] 13.- A process according to claim 8, characterized in that the filler material (7) is an epoxy resin.

[c14] 14.- A process according to claim 2, characterized in that the average width of said spaces between tracks (6) ranges from 0.3 mm to 0.5 mm for a track (5) thickness of 210 µm, to a width from 0.5 mm to 1.0 mm for a track (5) thickness of 400 µm.

[c15] 15.- A process according to claim 14, characterized in that the average width of said spaces between tracks (6) ranges from 0.8 mm to 1.0 mm for a track (5) thickness of 400 µm.

[c16] 16.- A process according to claim 5, characterized in that the width of said solder resistant mask (9) is from 21 µm to 30 µm.

[c17] 17.- A process according to claim 2, characterized in that the initial board is made up of a substrate (1) in the form of a two-sided board of a dielectric material, and two plates of a conducting material joined by means of two layers of adhesive (8a, 8b), one to each one of said sides of the substrate (1), carrying out step b) for chemical milling on both plates of conducting material to pro-

vide tracks (5a, 5b) separated by spaces between tracks (6a, 6b) on both sides of the substrate (1), and carrying out the subsequent steps c), d) and e) for application of the filler material (7a, 7b) and abrasion to obtain flush upper surfaces (3a, 3b), with the corresponding cooling, first on one side of the printed circuit board and then on the other side.